

# A REMARKABLE NEW GENUS AND SPECIES OF MERMITHID WORMS FROM JAMAICA.

By G. STEINER

*Of the Bureau of Plant Industry, United States Department of Agriculture.*

On September 29, 1922, the Federal Horticultural Board, through the kindness of E. R. Sasser, submitted five Mermithid specimens taken at Philadelphia, Pa., from soil about plant cuttings from Jamaica by Inspector C. A. Davis on September 25, 1922. These five Mermithids all belong to the same species, which is new to science, and is the representative of a new genus, remarkable in several respects. Our knowledge of the Mermithidae is still very limited. This family of parasitic nemas is of high economic importance and much more interest should be taken in it.

## ALLOMERMIS,<sup>1</sup> new genus.

*Diagnosis.*—A genus of the family of Mermithidae with only four head papillae, with a mouth opening lying ventrad behind the head papillae, with amphids (lateral organs) near the front of the head-end and so lying farther forward than the head papillae, with a single dorsal suspensory or retractory muscle on the oral part of the esophageal tube, with a vagina bent in a transverse plane of the body, with a pair of spicula and the cuticle with cross-fibers.

*Type species.*—*Allomermis trichotopson*,<sup>2</sup> new species.

The genus is closely related to *Paramermis*, but differs from it in having only four head papillae, whereas *Paramermis* has six; it differs also in having in the male two spicula while *Paramermis* has only one. The presence of cross-fibers in the cuticle is also a distinctive character since no *Paramermis* hitherto described has them. The genus *Pseudomermis*, which has the same number of head papillae as *Allomermis* (only four), differs in the position of the amphids. In *Pseudomermis* they have the normal position behind the lateral papillae and the mouth opening has its normal place on the front of the head-end.

Therefore the new genus *Allomermis* seems to be well separated and distinctly different from any other hitherto described Mermithid genus. As to relationship, it stands next to *Pseudomermis*. Considering the fact that *Allomermis* has the mouth opening and the

<sup>1</sup> αλλος = otherwise, differently.

<sup>2</sup> τριχωτος = hairy, ψου = egg.

amphids shifted as in some forms of *Paramermis*, one might regard it as being closer to this genus, but the paired spicula and the number (four) of the head papillae speak against such a relationship.

**ALLOMERMIS TRICHOTOPSON, new species.**

Plates 1-2.

*Number of specimens.*—3 females, 2 males.

*Habitat.*—Soil, Jamaica.

*Measurements.*—Formula of Cobb:

Pharynx. Nerve-ring. Neck. Vulva. Posterior end of fat body.

Female:	$\frac{?}{?}$	$\frac{1.9}{0.9}$	$\frac{?}{?}$	$\frac{61.0}{1.2}$	$\frac{98.4}{.8}$	12 mm.
Male sex opening.						
Male:	$\frac{?}{?}$	$\frac{2.5}{1.1}$	$\frac{?}{?}$	$\frac{50}{1.5}$	$\frac{98.0}{1.3}$	9.7 mm.

Formula of de Man:

Female	Male
$\alpha$ —83.3	66.6
$\beta$ ?	?
$\gamma$ —76.0	50.0

Length of female No. 2—11 mm.

Length of female No. 3—16 mm.

Length of male No. 2—11 mm.

The size of this species if compared with that of other Mermithids is rather small. The cuticle was detached from the hypodermis and so its thickness could not be exactly measured. On the surface is a layer of cross-fibers.

The hypodermis has apparently eight longitudinal chords,<sup>3</sup> of which the lateral, measured on the surface, are about 42 microns wide, the dorso-medial about 8 microns, the ventro-medial and the four submedial 3-4 microns; it seemed that all of them are about equally distant from each other.

The head-end is bluntly rounded as shown in Figures 1-4. Its structure is very characteristic. The mouth opening is situated some distance behind the head papillae and has therefore a decidedly ventral position. I know no other nema with such remarkable location of the mouth opening. Some species of the genus *Paramermis* have a shifted mouth opening, but there it still lies between the anterior extremity and the circle formed by the papillae. Only in *P. gastrostoma*, a species described earlier by the writer, and in *P. hempeli*, described recently by Micoletzky, and closely related to *P. gastrostoma*, is the mouth opening situated on the same level with the head papillae.

<sup>3</sup> Proposed by Doctor Cobb for use in place of the rather unsatisfactory term "longitudinal fields"; it may be used in the same way as the German term "Längswülste."

But this is not the only peculiarity in the structure of the head-end. Whereas the mouth opening is shifted backward and down from the top of the head, two other organs, namely the amphids, are shifted forward and nearer to the top of the head. These amphids lie throughout the nematode class laterally behind the head papillae. As far as I know only the above-mentioned *Paramermis*, species which have a shifted mouth opening, have also shifted amphids; in these species they are found on the same level with the head papillae or even a little farther forward. But *Allomermis trichotopson* represents in this transformed arrangement the extremest case, the mouth opening located farthest caudad, the amphids, farthest forward. There are four submedian head papillae situated at the normal place.

The mouth opening is a rather narrow, thin-walled channel through the cuticle and lower subcuticle layers, leading to the beginning of the cutinized esophageal channel (fig. 1). The latter at its beginning is dorsally attached by a rather strong muscle passing obliquely caudad and dorsad. This muscle certainly functions in a double way, as suspensory muscle for the end of the esophageal channel and as a retractor muscle. A protractor muscle is apparently not needed because of the elasticity of the skin, the exoskeleton.

The amphids are, as shown in Figure 6, pouch-like organs; the bottom of the pouch is connected with a nerve and with what seems to be a glandular cell; from the bottom of the pouch, which is perforated, rise the terminals, thread-like end organs of the nerve, which are perhaps chemical in function.

There is a difference between the amphids of the male and female in so far as those of the male are larger; such a sexual dimorphism is not uncommon among Mermithids.

The length of the esophageal tube could not be determined, but it probably runs down to near the vulvar opening; I could follow it near to the midst of the anterior uterus.

The so-called fat body is filled with rather small globules so that the cell walls even in the cleared specimens could not be distinctly seen. Opposite the vagina the fat body was separated, perhaps to give space to the sexual organs.

The vulva is a cross-fissure (fig. 7) leading into a tubular sigmoid vagina bent in a transverse plane of the body. Numerous, chiefly circular, but also longitudinal, muscle fibers form the wall of the vagina. This latter opens at right angles into the uteri which are outstretched forward and backward. The structure of the two ovaries and their outlets could not be seen, but each ovary is bent backwards and its end may lie at half the distance to the vulva. A great number of very typically formed eggs were in the uteri. They were spherical, had a rather strong shell covered with numerous

hair-like processes, or perhaps even prickles (fig. 9). There is no other *Mermis* known as yet with such eggshell appendages.

The female tail end is represented in figure 10; it has the same blunt ending as that of the male (fig. 11); the female specimen whose tail end is sketched is slightly intersexual as shown by the presence of male papillae near the end.

The male tail end is shown in figures 11 and 12. There are two spicula, rather short, slightly curved; the retractor muscles are to be seen on figure 12 and the protractores on figure 11. The male papillae are arranged in three double series, the longest ventro-medial, the two others submedial (fig. 12).

*Type*.—U.S.N.M., Helminthological Collections No. 26078: paratypes No. 26079.

#### LITERATURE CITED.

STEINER, G., Studien an Nematoden aus der Niederelbe. I. Teil: Mermithiden. Mitt. Zool. Mus. Hamburg, vol. 35, 1918.

MICOLETZKY, H., Mermithiden und freilebende Nematoden aus dem Grundschlamm des Attersees in Oberösterreich. Zool. Anz., vol. 55, p. 240, 1923.

#### EXPLANATION OF PLATES.

##### PLATE 1.

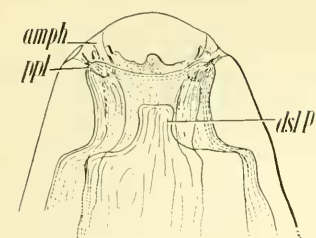
##### *Allomermis trichotopson*, new species.

- FIG. 1. Lateral view of a male head end; *amph*, amphid; *or*, mouth opening; *ppl*, small supplementary papilla between dorso-submedial papilla and amphid; *rtret oc msc*, retractor and suspensor muscle of the oral end of the oesophageal tube.
2. Ventral view of the head end; *amph*, amphid; *ds ppl*, dorso-submedial papilla; *rs ppl*, ventro-submedial papilla; *or* mouth opening.
3. Dorsal view of the head end; *amph*, amphid; *dsl p*, thickening of the subcutaneous tissue of the dorsal side; *ppl*, dorso-submedial papilla.
4. Frontal view of the head end; *amph*, amphid; *or*, mouth opening; *s ppl*, submedial papilla.
5. Head end of a female specimen; *nrr r*, nerve ring; compare the somewhat smaller amphid of this female with the amphid of the male on Fig. 1.

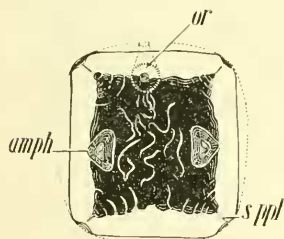
##### PLATE 2.

##### *Allomermis trichotopson*, new species.

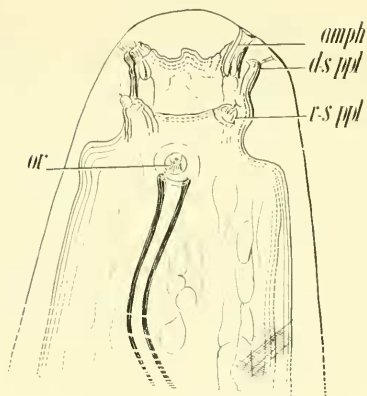
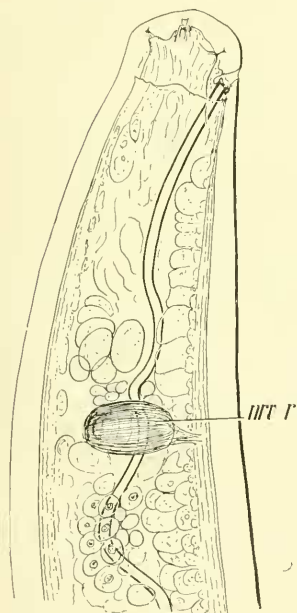
- FIG. 6. Schematic sketch of the amphid; *gl*, glandular cell; *nrr f*, nerve fiber; *t*, terminal.
7. Ventral view of the vulva, the vagina, and the uteri.
8. Lateral view of the vulvar section of the body.
9. Egg.
10. Female tail end, slightly intersexual; *ppl*, male papillae.
11. Lateral view of the male tail end; *brs msc*, bursal muscle; *dct ej*, ductus ejaculatorius; *f*, fat body; *p*, protractor spiculi; *sp*, spiculum.
12. Ventral view of the male tail end; *vm ppl*, ventro-medial series of male papillae; *d vs ppl*, *vs ppl*, dextero-ventro-submedial series of male papillae.



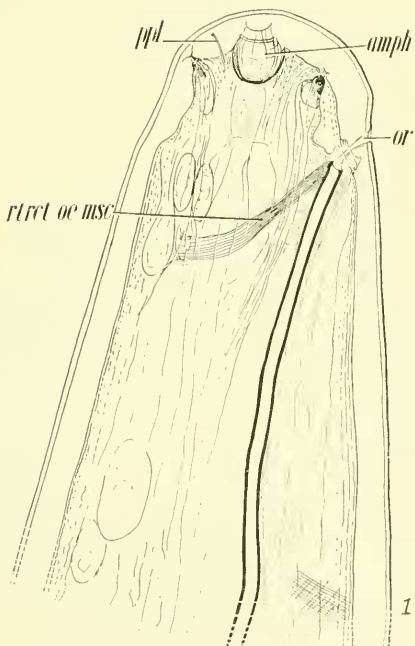
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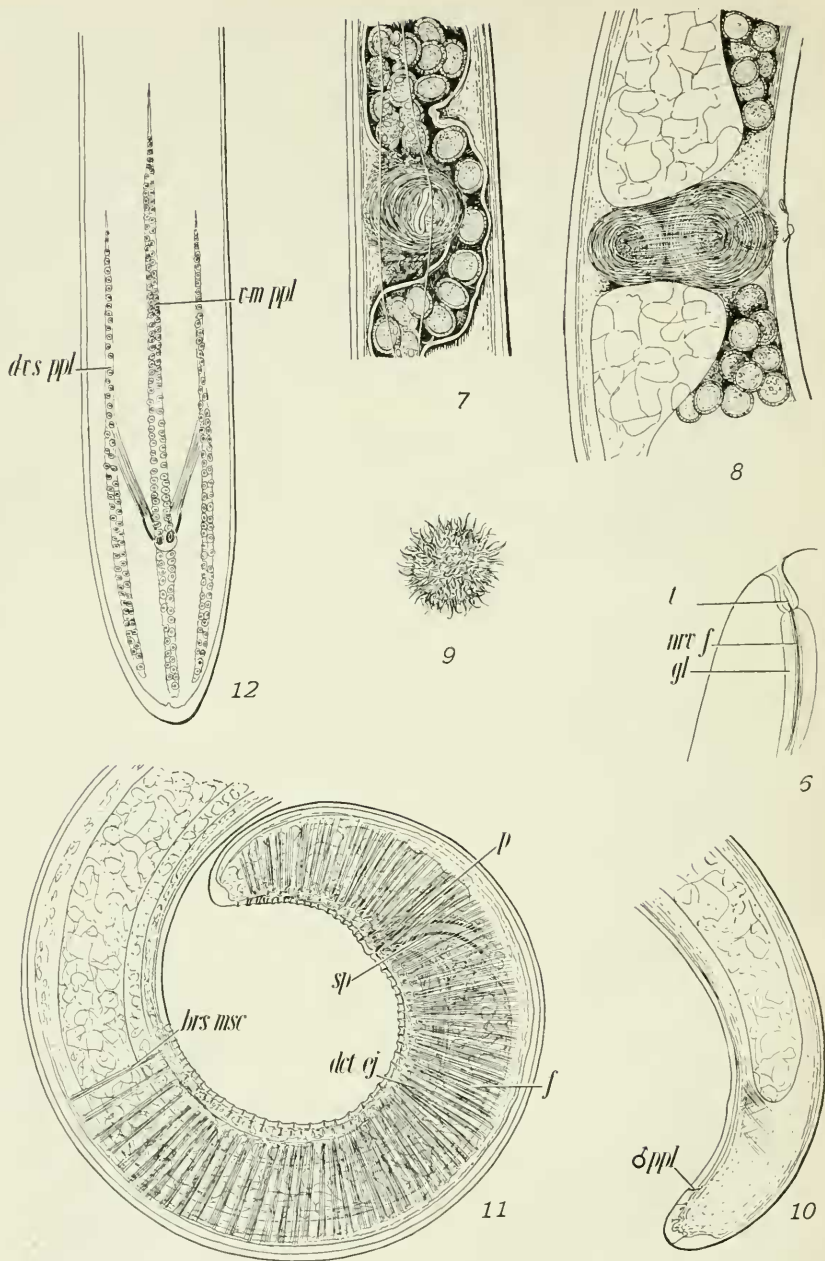
2



1

# A NEW GENUS OF MERMITHID WORM

FOR EXPLANATION OF PLATE SEE PAGE 4



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